

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY



## PCT

### WRITTEN OPINION (PCT Rule 66)

To:

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JAPON

Date of mailing  
(day/month/year) 21.09.2004

Applicant's or agent's file reference  
664250

**REPLY DUE** within 3 month(s)  
from the above date of mailing

International application No.  
PCT/JP 03/15906

International filing date (day/month/year)  
11.12.2003

Priority date (day/month/year)  
11.12.2002

International Patent Classification (IPC) or both national classification and IPC  
C30B25/02

Applicant  
AMMONO SP. Z.O.O.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.
 

**When?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also:** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 11.04.2005

Name and mailing address of the international preliminary examining authority:



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外国方式

**I. Basis of the opinion**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

**Description, Pages**

1-7, 9-12, 14-22, 24-26, 28-42 as originally filed  
8, 13, 23, 27 received on 14.07.2004 with letter of 09.07.2004

**Claims, Pages**

43-46, 48 as originally filed  
47 received on 14.07.2004 with letter of 09.07.2004

**Drawings, Sheets**

1/6-6/6 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

6. Additional observations, if necessary:

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-5,8-10
Inventive step (IS)	Claims	
Industrial applicability (IA)	Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

**D1: WO 97/13891 A (GRZEGORY IZABELLA ;KRUKOWSKI STANISDAW (PL); STEPNIEWSKI ROMAN (PL) 17 April 1997 (1997-04-17)**

**D2: LIU L ET AL: "Substrates for gallium nitride epitaxy" MATERIALS SCIENCE AND ENGINEERING R: REPORTS, ELSEVIER SEQUOIA S.A., LAUSANNE, CH, vol. 37, no. 3, 30 April 2002 (2002-04-30), pages 61-127, XP004349792 ISSN: 0927-796X**

***Preliminary remarks***

The application does not meet the requirements of Article 6 PCT because the claims 4,5,6,7 which are dependent on claim 1 do not clearly define the matter for which protection is sought. The dependent product claims refer to features designated by letters not mentioned in the independent claim 1.

***Novelty***

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-5,8-10 is not new in the sense of Article 33(2) PCT.

In examples 1 (see page 7, lines 11-15) and 2, document D1 discloses a substrate of gallium nitride having a Ga-polar face and an N-polar face with a dislocation density of less than  $10^5 \text{ cm}^{-2}$  on which a layer of nitride  $\text{Ga}(\text{Al},\text{In})\text{N}$  is grown by means of vapour phase epitaxy. The subject matter of claims 1,2,4,5 is therefore not new with respect to D1. Moreover, the review document D2 (see pages 112-115) discloses that GaN substrates with Ga-polar and N-polar sides with dislocation densities as low as  $10^1 \text{ cm}^{-2}$  possibly doped with impurities such as silicon or zinc at concentrations of the order of  $10^{16} \text{ cm}^{-2}$  are known in the prior art. Consequently, the subject matter of claims 1-5,8-10 is not new with respect to the disclosures of D2.